

Suffering from trauma: Assessing the impact of trauma experiences and PTSD symptoms on parents' attachment representations and sensitivity towards their children.

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Abstract

Object. Adult attachment reflects the mental representation of past and present attachment experiences and provides a personal framework to regulate behavior and expectations in interpersonal relationships. Insecure attachment representations have been found to pose several risks, such as negative consequences for mental and physical health and parenting capacities. Because traumatic experiences have the possibility to negatively influence the way people think about themselves, others and the world, the aim of this study was to assess whether PTSD symptoms and traumatic experiences had an influence on the security of attachment representations. This could also account for differences in post-trauma adjustment and parenting. Therefore, a second aim of this study was to test whether attachment representations served as a moderator between the effect of PTSD on parental sensitivity.

Measures. 65 asylum-seeker and refugee parents were analyzed regarding the number of traumatic experiences and symptoms of PTSD (Harvard Trauma Questionnaire), parental sensitivity (Emotional Availability Scales) and attachment representations (Secure Base Scriptedness).

Results. In contrast to our expectations, posttraumatic stress symptoms and traumatic experiences did not affect parent's attachment security. In line with our expectations, posttraumatic stress symptoms and attachment security both had a significant influence on parental sensitivity, where attachment representations moderated the relationship between PTSD symptoms and parental sensitivity.

Conclusions. The results show that when the number of PTSD symptoms is high, the lack of a secure attachment representation increases the risk of insensitive parenting. These findings suggest that a parent's sensitivity is affected not just by attachment representations but also by the conjunction of risk factors such as traumatic experiences, symptoms of PTSD and insecure attachment representations. Therefore, parents who suffered from trauma need to be supported in (re)establishing secure models of self, others and the world and need to be guided in their interaction with their children, so that they will be able to offer their child a sensitive and secure interaction.

Introduction

Adult attachment reflects the mental representation of past and present attachment experiences (Riem, Bakermans-Kranenburg, van IJzendoorn, Out, & Rombouts, 2012). These so called attachment representations have a very important function by providing a personal framework to regulate behavior and expectations both in present relationships and as new relationships are constructed (Coppola, Cassibba, & Costantini, 2007). In his attachment theory, Bowlby (1973) proposed that with age and cognitive development, sensorimotor representations of secure base experience give rise to internalized mental representations, or working models, of the world and of significant persons in it. Interactions with attachment figures that are available and supportive in times of need foster the development of a sense of attachment security and internal working models that are generally positive. Interactions with attachment figures that are rejecting or unavailable in times of need undermine the sense of attachment security and cause the formation of negative working models (Mikulincer, EinDor, Solomon, & Shaver, 2011; Mikulincer & Shaver, 2007).

Attachment patterns and well-being

Individual differences in attachment are related to health and adjustment and can have profound influences on various areas of functioning (Mikulincer et al., 2011). For example, individuals with secure attachment representations have higher self-esteem (Mikulincer & Shaver, 2007) are more efficient in adjusting to stressful experiences (Dozier, StovallMcClough, & Albus, 2008), generally have more effective coping styles and are better in regulating their emotions (Mikulincer & Shaver, 2007). In contrast, insecure attachment can serve as a risk factor for the development of psychopathology (Harari et al., 2009). For example, in a meta-analysis by van IJzendoorn and Bakermans-Kranenburg (van Ijzendoorn & Bakermans-Kranenburg, 2008) it was found that secure classifications on the Adult Attachment Interview (AAI; George, Kaplan & Main, 1985) were clearly underrepresented in clinical samples. Berant, Mikulincer and Shaver (Berant, Mikulincer & Shaver, 2008), revealed in a seven- year longitudinal study that maternal avoidant attachment was the best predictor of mothers' marital satisfaction and deterioration of their mental health. In addition, mothers' attachment insecurities were associated with their children's emotional problems and poor self-image.

These findings show that attachment insecurities can not only have negative influences on the individuals' mental health, but also on that of any of their children. Therefore, in the interest of improving people's well-being, in the current study we will search for specific factors that can influence attachment and play a role in determining the parent-child relationship.

Stability or change?

One assumption that has often been made in attachment theory is that attachment patterns are stable over time. It is often assumed that secure children grow up to become secure adults (Fraley, 2002). However, this is not always the case. Several studies examined the stability of attachment patterns from infancy through adulthood and have not found much continuity overall. For example, in his meta-analysis, Fraley (2002) found a mean correlation of .27 (N=218) between Strange Situation scores in infancy and attachment security on the AAI at ages 19-20, indicating moderate continuity.

However, when the focus lies on change in adulthood, there seems to be more stability. From comparing two meta-analyses, Fraley and Brumbaugh (Fraley & Brumbaugh, 2004) found that the stability in adulthood (.54) was higher than observed in childhood (.39). Therefore, they concluded that early attachment patterns manifest themselves in some shape or form across diverse developmental periods during the course of life, even if the degree to which those patterns manifest themselves is minor and change can occur (Fraley & Brumbaugh, 2004).

Theories accounting for stability and change

Apparently, during the course of life there can be both stability and change of attachment patterns. How can this be possible? Different theories have come with explanations. One of the first was the railway metaphor of Bowlby (1973). According to Bowlby, there are multiple pathways along which a person can develop, just as there are many types of attachment patterns he can form. Which ones it will be depends on a child's early experience with caregivers. These interactions will determine the set of behavioral strategies a child uses to regulate proximity to attachment figures, as well as the quality of working models of self, others and the world. Once formed, it is likely that early working models and attachment patterns will be retained by different mechanisms. For example, people have the tendency to assimilate new information into existing knowledge structures (Bowlby, 1973). However, because working models are also largely accurate reflections of actual interactions with significant others, attachment representations can be revised and updated based on new interpersonal experiences (Bowlby, 1973).

Today, elements of Bowlby's railway metaphor are incorporated in the prototype approach (e.g. Fraley, 2002; Owens et al., 1995; Sroufe, Egeland, & Kreutzer, 1990; Van IJzendoorn & Bakermans-Kranenburg, 1996). In this approach, two kinds of working models are distinguished; current working models and early 'prototype' models. Current working models can be revised and updated by relevant attachment experiences that deviate from previous experiences and existing knowledge. However, the prototype models formed in infancy continue to exist and exert a shaping influence on attachment patterns across the lifespan (Fraley & Brumbaugh, 2004; Mikulincer & Shaver, 2007). The prototype approach was tested by Fraley (2002) by constructing a dynamic

mathematical model and testing its goodness of fit with longitudinal data. Based on the findings, he concluded that it seems reasonable that a prototype-like process contributes to attachment stability across the life course.

Another theory is that of Fivush. According to Fivush (2006), attachment representations can be seen as forms of generalized event representations, or scripts. From this perspective, infants and children form a generalized representation based upon the very first experience with an event and assume future occurrences will confirm to this first experience (Nelson as cited in Fivush, 2006). They will start to notice and catalogue discrepancies only once they formed a stable generalized representation of what usually happens. Thus, if attachment representations are representations of generalized expectations based on caregiving experiences in infancy, some of the core components of these representations will emerge from the very earliest experiences onwards and remain stable, while also becoming more elaborate and flexible over time (Collins & Read, 1994; Fivush, 2006).

Attachment-relevant life events as predictors of change

Clearly, secure children do not just grow up to be secure adults. Attachment patterns can be changed, updated or revised in light of new attachment-relevant experiences that deviate from previous experiences and existing knowledge. Studies have shown that attachment relevant life events occurring early in life can produce discontinuities in attachment patterns later in life (e.g. Lewis, Feiring, & Rosenthal, 2000; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000). For example, the study of Weinfield, Sroufe and Egeland (2000) revealed that maternal depression, child maltreatment and poor family functioning during childhood and adolescence are significant predictors of attachment insecurities revealed in the AAI at age 19.

When focusing solely on change in adulthood, however, some studies, which used self-report measures, failed to find associations between attachment relevant life events and changes in attachment patterns (e.g. Baldwin & Fehr, 1995; Cozzarelli, Karafa, Collins, & Tagler, 2003; Davila & Cobb, 2003; Scharfe & Bartholomew, 2005). According to Davila and Cobb (2004) this is because life events will lead to change only when they disconfirm current attachment models. They predicted that the effect of change in attachment patterns might be cognitively mediated through subjective perceptions and the way people appraise and interpret events. This prediction has been validated by various studies (e.g. Crowell, Treboux, & Waters, 2002; Davila & Sargent, 2003; Simpson, Steven Rholes, Campbell, & Wilson, 2003). For example, Davila, Karney & Bradbury (1999) found that the transition to marriage moved newlywed husbands and wives toward attachment security mainly if they appraised their marital relations positively.

Traumatic experience and PTSD as predictors of change

As is incorporated in all the described theories, it seems that attachment representations can only change when disconfirming attachment relevant or life events occur. Therefore, it seems likely that traumatic experiences, defined as events that threaten a person's life or physical integrity and invoke a response of intense fear, helplessness or horror (American Psychiatric Association, 2000), can influence attachment representations enormously.

As was acknowledged by Janoff-Bulman (1989), traumatic events have the intrinsic property to shatter people's basic assumptions. She suggests that the majority of people hold core assumptions that, by providing people with expectations about themselves, others, and the world, allow an effective daily functioning and help maintain a sense of invulnerability (Mikkelsen & Einarsen, 2002). Three basic assumptions are considered as most significant: benevolence of the world, meaningfulness of the world and self-worth. The experience of a traumatic event may disconfirm these prior held beliefs, inducing the need for reappraisal and revision of fundamental schema's (Mikkelsen & Einarsen, 2002). For example, Magwaza (1999) compared basic assumptions of traumatized victims diagnosed with PTSD who had suffered torture and detention or had witnessed the traumatic death of close family members with a non-traumatized control group. Even 10–15 years after the trauma victims perceived the world as less meaningful and benevolent than the controls.

Because attachment representations are also partly formed by core models of self, others and the world, we can wonder if traumatic events shatter these too, thereby changing them in a negative direction. Possibly they disconfirm these formerly held working models and induce a need to revise attachment representations. Furthermore, as attachment representations and the models of self, others and the world are based upon beliefs about the value of seeking help from attachment figures and the feasibility of attaining safety, comfort and protection (Mikulincer et al., 2011), they can probably be altered too when these beliefs are affected. Because traumatic events happen usually unexpected and are out of control, they might threaten people's sense of coherence and stability (Magwaza, 1999). Beliefs about the value of seeking help from attachment figures and the feasibility of attaining safety, protection and comfort can become more unstable and change attachment representations, especially when more than one traumatic event is experienced.

In some cases, experience of one or more traumatic events can lead to the development of Post-Traumatic Stress Disorder (PTSD; Brewin, 2003). PTSD is characterized by re-experiencing the traumatic event, avoidance of stimuli associated with the trauma, numbing of general responsiveness and hyper arousal (Cohen, Zerach, & Solomon, 2011). Because PTSD involves repeated reactivation of the trauma, (newly formed) negative models of self, others and the world may be amplified, resulting in attachment representations that reduce the likelihood of attaining a calm, secure mental state even long after the original trauma (Mikulincer et al., 2011). This can add to the revision of

attachment models which would be expected by the experience of traumatic events alone. Therefore, we can expect that attachment representations can become more negative in the light of traumatic events, in particular when the number of experienced traumatic events increases. Furthermore, the presence of PTSD symptoms in victims of trauma can also lead to more negative attachment representations.

The impact of trauma and attachment on maternal sensitivity

Besides the possible change of attachment representations, traumatic events and PTSD may influence the parent-child interaction as well. Various studies have shown that parents diagnosed with PTSD report significantly poorer parent-child relationships than those without PTSD (Ruscio, Weathers, King, & King; Samper, Casey, King & King as cited in Ee et al., 2012). One of the key mechanisms in an effective parent-child relationship is parental sensitivity. According to Ainsworth and colleagues (as cited in Koren-Karie, Dolev, Sher, & Etzion-Carasso, 2002), this means being aware of one's infant's signals, being able to interpret them correctly and the ability to respond to them appropriately, promptly and effectively.

In response to extreme stress, the flooding of cognitions by traumatic events, defensive reactions (Fonagy & Target, 2003) or disordered affect, parents with pathological trauma often show disturbed cognitions and impairments in cognitive functioning (Kaitz, Levy, Ebstein, Faraone, & Mankuta, 2009). A chronic sense of "current threat" and difficulties in reflective thinking are adding to this. These cognitive distortions may affect the way they think and feel about and behave towards their children (Slade, 2005). Also it may interfere with their capacity to consider their children's perspective and interpret their thoughts and feelings correctly (Kosslyn, 2005). In addition, the experience of traumatic events can lead to the forming of perceptions of oneself as impotent in the face of malevolence. Together with intense anger, sadness and fears, this can, on their own or together with these cognitive distortions, lead to a degradation in the capacity to respond sensitively to their children and the possibility to serve as a secure base for them (Almqvist & Broberg, 2003; Lieberman & Knorr, 2007). Several studies have shown the link between PTSD and reduced sensitivity. For example, Feeley and colleagues (Feeley et al., 2011) found that parents with PTSD were less sensitive and less effective at structuring the interaction with their children.

Attachment representations also play a role in defining the parent-child interaction in general, and maternal sensitivity in specific. In general, a sense of security allows a person to attend less to his or her own needs and shift attention to the domains of other behavioral systems, such as caregiving. Security protects a caregiver from being overwhelmed by others' suffering or feeling threatened by the interdependence involved in providing care. In addition, secure adults are the ones who have generally witnessed good care provided by their attachment figures, which gives them positive models for their

own behavior (Collins & Feeney, 2000). Ainsworth and colleagues (in Cassibba, IJzendoorn, & Coppola, 2012) have shown that adults who correctly perceive their children's signals and who respond to them in a prompt, appropriate and contingent way are more likely to have a secure attachment relationship. Examples of such findings are numerous (e.g. Biringen et al., 2000; Oyen, Landy, & Hilburn-Cobb, 2000; Pederson, Gleason, Moran & Bento, 1998; Tarabulsky et al., 2005). The study of Coppola and colleagues (2006), for example, has shown that maternal attachment representations were significantly associated with maternal sensitivity in an Italian sample.

Because trauma experiences and PTSD symptoms might affect both security of attachment representations as well as maternal sensitivity, and because attachment representations in their own right influence maternal sensitivity, it seems plausible that attachment representations serve as a moderator between trauma and sensitivity.

Parental attachment, sensitivity and intergenerational transmission of attachment

We have seen that attachment patterns have an impact on the well-being of parents, their children and their interactions, and that these might be influenced by traumatic experiences and PTSD. However, understanding the way trauma and PTSD influence attachment representations and maternal sensitivity is also important because it impacts the attachment patterns of children as well, with all the consequences it entails. There is extensive evidence that parents with a 'secure state of mind' are more willing and able to respond sensitively to their child's needs (van IJzendoorn, 1995), which is an important condition for the development of attachment security (De Wolff & van IJzendoorn, 1997). This indicates that there exists "intergenerational transmission of attachment," by which secure or insecure parental "states of mind" are transmitted to children through caregiving patterns (Mikulincer & Shaver, 2007). In terms of the prototype perspective, parental attachment representations influence sensitivity, affecting the 'prototype working models' that children will form of attachment. To a small degree, this will influence their attachment patterns throughout the rest of their lives, creating a vicious cycle. Exploring factors that influence attachment representations and maternal sensitivity, such as traumatic experiences, can help us to improve parents' and children's well-being and can learn us a great deal about how the cycle of transmission of intergenerational risk factors, such as insecure attachments, might be broken.

The current study

In this study, we will assess the relationships between trauma, PTSD, attachment and sensitivity in a high-risk sample of refugees from different cultures, who all experienced trauma during war. Three hypotheses will guide this research; first, (1) we hypothesize that parents will have more insecure attachment representations when they have experienced more traumatic events, second (2) parents will have more insecure attachment representations when they show more symptoms of PTSD, and third

(3), in relation to their children, parents with more insecure attachment representations and more PTSD symptoms will be more insensitive than when they either have PTSD or an insecure attachment representation alone.

To the best of our knowledge, only two other studies are known that directly assessed relations between attachment, trauma and PTSD (Mikulincer et al., 2011; Solomon, Dekel, & Mikulincer, 2008). Both studies assessed PTSD and attachment orientations at different time points after the 1973 Yom Kippur war in a sample of Israeli ex-POWs and a matched control group of veterans of the same war. They found that PTSD was associated with higher attachment insecurity. They also found that Ex-POWs were less secure with respect to attachment than the controls at the initial assessment, and this difference became larger in time. None of the studies incorporated measures on parent-child relationships. Therefore, this study will be a possible extension of earlier research findings by giving insight in the way parental attachment representations and maternal sensitivity can be altered and affect the parent-child relationship. This study will thus make a unique contribution to already existing knowledge.

Methods

Participants

Participants in this study were 80 asylum-seekers and refugee parents (mothers, fathers or both) who suffered trauma, with a child between 18 – 42 months of age who was born in the Netherlands. Asylum-seekers and refugees with severe mental retardation, addictions or psychosis were excluded. Likewise, dyads were excluded when children themselves had experienced traumatic events. One participant was excluded from analyses because his answers on the Secure Base Script assessment (SBS) were very badly translated and thus were unreliable. From the resulting sample, 79 people in total, a substantial subset (10 participants) did not participate at the SBS, while four people had too much missing data on the Harvard Trauma Questionnaire (HTQ) to be useful for analyses. Therefore, these 14 participants were not included, which made our total sample consisting of 65 participants.

To test the probability that the scores of participants that did not participate with the SBS significantly differed from that of the participants that did participate, independent samples t-test and chi square tests for independence were performed for various descriptive statistics. Participants with missing scores on the SBS did significantly differ in the amount of years they lived in the Netherlands prior to the study ($M=4.05$, $SD=3.31$) than participants without missing scores ($M=6.76$, $SD=4.83$; $t(15.44) = -2.76$, $p = .04$). They also significantly completed lower educations, most of them did not receive any education at all or only completed a few years of primary school ($\chi^2(4, 73) = 15.10$, $p < .01$), and more of them lived in an asylum center ($\chi^2(1, n = 79) = 7.56$, $p < .01$). Participants that didn't participate with the SBS did not significantly differ in age, sex, country of origin, years in possession of a residence permit or PTSD symptoms from that of participants that did participate.

The parents (41 mothers and 24 fathers) ranged in age from 19 to 56, with a mean age of 35.21 ($SD=8.12$) for fathers and a mean age of 29.42 ($SD=6.10$) for mothers. They had fled from all over the world (West and South Europe: 1.5%, South America: 1.5%, Eastern Europe and Balkan: 6.2%, Russia and former Russia: 7.7%, South and Eastern Asia: 9.2%, Africa: 30.8%, Middle East: 43.1%) to the Netherlands 3 months to 20 years ($M = 6.38$, $SD = 4.71$) prior to the study. Of all parents, 38 had received a residence permit (58.5%) and 29 parents and their children (44.6%) lived in an asylum center. Of all the parents, 13.3% had no or little education, 18.3% had finished primary school, 23.3% had finished secondary school, 11.7% had finished vocational education and 33.3% held a professional or university degree. The children (48 in total, of which 31 were boys and 17 were girls) ranged in age from 14 to 50 months, with a mean age of 28.33 months ($SD= 9.77$). Of 17 children both parents participated.

Parents had experienced multiple traumas ($M=8.57$, $SD=5.74$). Examples of the most common experienced are torture (41.5%), experience of lack of water or food (43.3%), threatened with execution (44.6%), threatened with torture (47.7%) unnatural death of a family member (46.2%), forced separation of family members (53.8%), and nearly died (55.4%).

Measures

Traumatic events and PTSD symptoms of parents were measured with the Harvard Trauma Questionnaire (HTQ; Mollica, Caspi-Yavin, Bollini, & Truong, 1992). The questionnaire consists of a list of 20 traumatic events and a 30-item trauma-symptom list. The first 16 items are derived from the *Diagnostic and Statistical Manual of Mental Disorders, fourth edition* (DSM-IV; American Psychiatric Association, 2000) criteria for PTSD and measure the severity of PTSD symptoms. The other 14 items describe symptoms related to specifically refugee trauma. The HTQ asks participants which traumatic events they experienced, witnessed or heard of. It also asks participants to rate to what degree particular symptoms have bothered them in the past week on a frequency scale of 1 (*not at all*) to 4 (*extremely*). A cutoff score of 2.5 was used in several studies to identify clinically significant PTSD (Mollica et al., 1992). Mollica and colleagues have also developed a scoring algorithm to adapt this measure to DSM-IV criteria, and suggest this method for use in populations for which the instrument has not been validated (Mollica and colleagues as cited in Rasmussen, Smith, & Keller, 2007). A standard version of the HTQ is available in many languages. In the current study, if a specific language was not available, interpreters have translated the questions during the assessment.

The psychometric properties of the HTQ are adequate across cultures, and in general applicable to measure symptoms of posttraumatic stress (Kleyn, Hovens & Rodenburg as cited in Ee et al., 2012). In a review of instruments used in studies of refugees, Hollifield and colleagues (cited in Ee et al., 2012) noted that the HTQ is statistically reliable and valid in multiple studies across multiple traumatized populations. In the current study, internal consistency was high (Cronbach's $\alpha = .92$; .84 for intrusion, .79 for avoidance, .82 for arousal and .89 for the specific refugee trauma-items).

Attachment representations of parents were measured with the Secure Base Script assessment (SBS; Waters & Rodrigues-Doolabh, 2004). The narrative-based SBS measure is a word-prompt method used for assessing participants' awareness of and access to a secure base script (Waters & Rodrigues-Doolabh, 2004). Secure base script knowledge correlates with security in the Adult Attachment Interview ($r_s .50 - .60$; Waters & Waters as cited in Groh & Roisman, 2009) and is theorized to form a foundation for attachment representations (Bretherton as cited in Groh & Roisman, 2009). Parents completed the SBS using word prompts that form the outline of a story. Each outline included three columns of four words and was presented one at a time. Mothers were asked to read down from each column from left to right to produce a story. They were told that the stories would be recorded using an audio-recorder, and that they could start the story over if they desired. Of the six word-prompt outlines presented, four were attachment-related: two parent-child oriented lists (i.e., Baby's Morning and Doctor's Office) and adult-couple oriented lists (i.e., Troubles at Work and The Accident). The other two were filler stories (Trip to the Park, Going Shopping) and were not scored for this report.

Following a method developed by Waters and Rodrigues and Doolabh (2004), narratives were coded independently by two trained coders, both working at Foundation Center '45, on a 7-point scale

for the extent to which they were organized around a secure base script. A secure base script is one in which there is a bid for help, the bid is recognized and help is offered, the help is useful in overcoming the problem, and the situation ultimately returns to normal (Groh & Roisman, 2009). Narratives who show this structure clearly receive a 7; narratives who lack this structure completely receive a 1. A composite derived by averaging the secure base scriptedness scores across all four stories was used in our analyses.

Inter-rater reliability for the SBS was established with the use of Pearson Product-Moment Correlations and Intraclass Correlation Coefficients (ICC's) on a sample of 10 randomly selected cases. The inter-rater reliability for each of the four stories as computed with the Pearson product-moment correlation was high (r between .84 and .95), just as that of the composite score ($r=.98$). Within story rater agreement calculated as intraclass correlations was high [ICC (2,1) ranging from .84 and .91]. Rater agreement for the composite score was also high [ICC(2,1)=.97].

Sensitivity of parents towards their children was measured with the Emotional Availability (EA) Scales, fourth edition (Biringen, Robinson, & Emde, 2008). Emotional availability refers to the degree to which each partner expresses emotions and is responsive to the emotions of others. Optimal emotional availability enhances secure-base behavior (Emde & Easterbrooks; Pipp-Siegel as cited in Ee et al., 2012). The EA Scales consist of six dimensions of the emotional availability of the parent toward the child and of the child toward the parent. The parental dimensions are sensitivity, structuring, non-intrusiveness, and non-hostility, and the child dimensions are the child's responsiveness to the parent and the child's involvement with the parent. Although all the scales were assessed, for the purpose of this study only the sensitivity scale was used during analysis.

On all dimensions, higher values signify more desirable behavior. So when parents scored higher on the Sensitivity scale this means they are more sensitive. Each dimension consists of two criteria rated on a seven-point scale and five criteria rated on a three-point scale. For sensitivity, examples of these criteria are: A sensitive adult displays a balanced, genuine affect and clarity of perceptions and appropriate responsiveness. The final score on each dimension ranges between 1 and 7 (Biringen et al., 2008).

In this study, parents and children were videotaped during a 15-min play session. The mothers received the instruction to play with their children and the available toys, as they liked. During this unstructured play, mother and child were alone in the room. Two raters trained for reliability and unaware of maternal history of trauma or level of symptoms independently coded the videotaped sessions. Interrater reliability for all the dimensions of the EA Scales, established on a randomly selected 30% of the videotapes, was satisfactory. Cohen's κ ranged from .76 to .91 (sensitivity: $\kappa = .89$

Procedure

The sample for this study was part of the sample for a larger PhD research on the intergenerational transmission of war trauma on the development of young children by Elisa van Ee (Van Ee, 2013).

The sample was recruited via Foundation Center '45, the Dutch national institute for the treatment of trauma resulting from war, persecution, and violence (Stichting 45, n.d.) and via regional asylum-seekers centers in The Netherlands. At Center '45, counselors informed eligible participants about the research project and asked their consent to be approached by research assistants. If eligible participants approved, a telephone meeting was scheduled to give information and answer questions on the project. A qualified interpreter was always present to help with the communication. If the parents consented to proceed, a research date was set. In addition, research assistants, together with interpreters, approached eligible participants at the asylum-seekers centers to inform them of the project. If (one of) the parents (was)/were willing to participate, a research date was set. All parents (one or both of them) came with their child for one day to Center '45 or a designated area within the asylum-seekers center. Before testing would start, a final informed consent was obtained. Participants were aware that they could withdraw their consent at any time and that anonymity was guaranteed. An interpreter was present during the entire day. If questionnaires were not available in a specific language, items were translated in session. Participants received 25 euro and reimbursement for traveling expenses. The data of these participants was used for the present study.

Statistical Analyses

Analysis was performed using SPSS 20.0 and 21.0. Preliminary analyses on the variables of interest were performed to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. Also, T-tests were conducted to search for group differences between mothers and fathers. Standard multiple regression was used to test the hypotheses that *'parents would have more insecure attachment representations when they had experienced more traumatic events'* and/or second *'have more symptoms of PTSD'*. The hypothesis that *'parents with more insecure attachment representations and more PTSD symptoms are more insensitive than when they have either PTSD or an insecure attachment representation alone'* was tested with a moderated regression analysis for testing interaction effects. Hierarchical multiple regression analyses were performed to detect main effects and interaction effects of HTQ symptoms and the moderator variable SBS scores on the sensitivity scores.

Results

Preliminary analyses

To search for group differences between fathers and mothers, parents were compared on demographic variables, post-traumatic stress symptoms, parental sensitivity scores and their secure base scriptedness scores. Because not all the variables were normally distributed, means were compared with both the Mann Whitney's U test and the Independent samples t-test, as for the categorical data the Chi square test for independence was used.

Analyses showed that fathers were significantly older ($Mdn = 37$) than mothers ($Mdn = 27.8$), $U = 281$, $Z = -2.67$, $p < .01$, $r = -.33$, and had completed a higher education than mothers, $\chi^2(4) = 12.2$, $p < .05$. There were no significant differences between mothers and fathers in terms of their country of origin, time spent in the Netherlands prior to the study, stay in asylum seeker center, current stress, possession of a residence permit and years in possession of the residence permit. They also did not significantly differ in the number of experienced traumatic events (neither for 'experienced only' nor for 'experienced, witnessed and heard'), the presence of post-traumatic stress symptoms, sensitivity scores or their secure base scriptedness score. Table 1 gives an overview of the mean scores and standard deviations for parent's test scores and current stress levels.

To see whether parent's sexes influenced the results of the analysis necessary for testing our hypotheses, the population sample is divided in four groups: the first group consisted of the total population sample; the second group consisted of fathers and mothers but without couples. Because there were more mothers than fathers in the total sample, decided was to delete all mother-counterparts of the couples. This resulted in a total group of 48 parents, in which fathers and mothers were distributed even ($n=24$ for both fathers and mothers). The third group consisted of only fathers ($n=24$) and the fourth group of only mothers ($n=41$).

Table 1. *Descriptive Statistics on Test Scores and Current Stress for the Sample of Parents*

Measure	Outcome	Both parents, with couples		Both parents, without couples		Father		Mother	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
HTQ	Traumatic Experiences	14.52	6.03	15.74	5.08	16.67	3.40	13.22	6.68
	HTQ PTSD symptoms	2.46	.70	2.52	.71	2.60	.69	2.37	.70
	PTSD <i>DSM-IV</i> Symptoms	2.61	.75	2.68	.77	2.80	.71	2.55	.77
Current Stressors	Asylum Procedure	2.20	1.43	2.11	1.40	2.17	1.47	2.22	1.42
	Legal Procedure	1.58	1.06	1.64	1.11	1.71	1.16	1.51	1.00
	Finances	2.05	1.11	1.98	1.05	2.17	1.05	1.98	1.15
	Housing	2.45	1.32	2.28	1.33	2.38	1.31	2.50	1.34
	Marriage or Relationship	1.69	1.00	1.72	1.01	1.83	1.00	1.61	1.00
	Relatives in Country	2.82	1.29	2.98	1.22	3.05	1.08	2.68	1.39
	Total Stress	12.78	4.00	12.70	3.82	13.29	3.39	12.50	4.30
SBS	Story 1	3.25	1.51	2.93	1.41	3.05	1.08	3.45	1.64
	Baby's Morning								
	Story 2	3.15	.91	3.03	.95	2.92	1.23	3.14	.94
	Doctor's Office								
	Story 3	3.10	1.25	2.93	1.12	3.17	.87	3.17	1.46
	Troubles at Work								
	Story 4	3.00	.93	2.90	.90	2.98	.76	3.00	1.06
The Accident									
	SBS mean score	3.12	.88	2.94	.84	3.02	.51	3.00	1.06
EAS	Sensitivity	4.37	1.46	4.19	1.45	4.58	1.28	4.24	1.56

Note: HTQ = Harvard Trauma Questionnaire, SBS = Secure Base Script Assessment, EAS = Emotional Availability Scales, PTSD = Post Traumatic Stress Disorder, *DSM-IV* = *Diagnostic and Statistical Manual of Mental Disorders, fourth edition*.

Traumatic experiences and PTSD symptoms as predictors of parental attachment representations.

Multiple regression analysis was used to test the first two hypotheses, '*parents will have more insecure attachment representations when they have experienced more traumatic events*' and '*parents will have more insecure attachment representations when they show more symptoms of PTSD.*'

Because the HTQ total scores (representing the PTSD symptoms), number of traumatic experiences and SBS scores (representing the security of parental attachment representations) were not normally distributed in each group (see for correlations between the various study variables and the outcomes of the normality tests Appendix 1), we made use of a robust method called bootstrapping. Bootstrapping is a nonparametric approach to statistical inference that substitutes computation for more traditional distributional assumptions and asymptotic results (Fox, 2008).

In all four groups, PTSD symptoms did not significantly predicted participants' security of attachment representations. The results indicated that the two predictors explained only 1% of the variance in the total group, 23% in the paternal group, 8% in the maternal group and 0.2% in the group without couples, which were all not significant (See table 2 for regression coefficients and bootstrapped standard errors). Neither PTSD symptoms nor the number of experienced traumatic events did significantly predict the security of attachment representations in the form of secure base scriptedness scores. Therefore, we can conclude that the first two hypotheses of this study can not be confirmed.

Table 2. *Unstandardized Regression Coefficients and Bootstrapped Standard Errors of Multiple Regression Analysis.*

	<i>B</i>	<i>SE B</i>
Model 1. Parents with couples (both fathers, mothers and couples)		
Constant	3.65	0.44
PTSD symptoms	-0.10	0.24
Traumatic experiences	-0.01	0.01
Model 2. Parents without couples (both fathers and mothers)		
Constant	3.60	0.51
PTSD symptoms	-0.33	0.27
Traumatic experiences	0.01	0.01
Model 3. Fathers		
Constant	2.92	0.55
PTSD symptoms	-0.15	0.24
Traumatic experiences	0.01	0.01
Model 4. Mothers		
Constant	3.90	0.68
PTSD symptoms	-0.13	0.41
Traumatic experiences	-0.01	0.01

Note: $R^2 = .05$ ($p = .24$) for model 1, $R^2 = .05$ ($p = .36$) for model 2, $R^2 = .06$ ($p = .55$) for model 3 and $R^2 = .08$ ($p = .22$) for model 4.

Note 2: Bootstrap results are based on 5000 bootstrap samples.

Moderation of the effect of PTSD symptoms on sensitivity by parental attachment representations.

Multiple hierarchical regression was employed to investigate the role of posttraumatic stress symptoms on parental sensitivity and to test whether attachment representations of parents can modify this relationship. Again, use was made of the bootstrap sampling method to minimize the effects of the not normally distributed data. Results of the hierarchical regression analyses are displayed in Table 3.

At Step 1 in the total sample, the posttraumatic stress symptoms in the form of the HTQ total scores were entered into the model. This model explained a statistically significant share of the variance of the dependent variable sensitivity of 15%, $R^2 = .154$, $F(1, 63) = 11.46$, $p < .01$. At Step 2, the attachment representations in the form of SBS total scores were entered into the model. This model made a significant contribution over and above model 1 and explained 22% of the variability of parental sensitivity, $R^2 = .220$, $F(2, 62) = 8.75$, $p < .001$. The attachment representation variable explained an additional 7% of the variance in sensitivity, $R^2 \text{ change} = .066$, $F \text{ change}(1, 62) = 5.26$, $p < .05$. Both the PTSD variable as the attachment representation variable was significant at Step 2. These findings suggest that post-traumatic stress symptoms and parental attachment representations have a statistically significant influence on parental sensitivity. The negative sign of the regression coefficients for post-traumatic stress symptoms suggests that parental sensitivity was lower for individuals that had more PTSD symptoms and the positive sign of the regression coefficients for secure base scriptedness scores suggests that parental sensitivity was higher for individuals with more access to a secure base and thus with more secure attachment representations. At Step 3 the interaction term between SBS scores and HTQ scores was entered into the model and the total variance explained by the model as a whole further increased to 30%, $R^2 = .299$, $F(3, 61) = 8.65$, $p < .001$. The interaction term explained an additional 8% of the variance of sensitivity, $R^2 \text{ change} = .078$, $F \text{ change}(1, 61) = 6.83$, $p < .05$. All three independent variables were significant at the final step. Thus, parental attachment representation was a significant moderator of the relationship between PTSD symptoms support and sensitivity. These findings support the hypothesis that in relation to their children, parents with more insecure attachment representations and more PTSD symptoms will be less sensitive than when they either have PTSD or an insecure attachment representation alone. In Figure 1 you can see how the number PTSD symptoms and the degree of attachment representation interact in explaining parental sensitivity for parents with secure, average and insecure attachment representations.

For the group without couples, entering post-traumatic stress symptoms into the model at Step 1 resulted in a variance in sensitivity explained by the model of 16%, $R^2 = .155$, $F(1, 46) = 8.47$, $p < .01$. The addition of secure base scriptedness scores at Step 2 resulted in a further increase of the total variance explained by the model to 19%, which made a significant contribution over and above the

first step, $R^2 = .191$, $F(2, 45) = 5.31$, $p < .01$. However, only the PTSD symptoms were statistically significant. In Step 3 the interaction term was added and the total variance explained by the model as a whole now became 33%, $R^2 = .331$, $F(3, 44) = 7.27$, $p < .001$. The interaction term explained an additional 14 % of the variance in sensitivity, after controlling for PTSD symptoms and parental attachment representations, R squared change = .140, F change (1, 44) = 9.23, $p < .01$. In the final model only the main effect for PTSD symptoms was statistically significant, as was the interaction variable. There was no main effect for parental attachment representation. Therefore, in the group without couples hypothesis three is only partially confirmed. This means that parents with more insecure attachment representations and more PTSD symptoms will be less sensitive than when they have a lot of PTSD symptoms on their own. Parental attachment representations are, on their own, not able to influence parental sensitivity.

For the paternal group the first step, in which the PTSD symptoms were entered into the model, was not significant and thus failed to explain a statistically significant share of the variance of sensitivity. After the addition of attachment representations to the equation at step 2, the total variance explained by the model as a whole became statistically significant and was 27%, $R^2 = .273$, $F(2, 21) = 3.95$, $p < .05$. However, in this model only the PTSD symptoms were statistically significant. In the third and final step, after addition of the interaction term, the total variance explained by the model as a whole was 29% but was no longer significant. None of the independent variables remained significant in this final model. These findings do not support hypothesis three and therefore, fathers' PTSD symptoms and attachment representations are not able to influence the degree of their sensitivity and for there is also no moderating effect of fathers' attachment representations on sensitivity.

For the maternal group, PTSD symptoms were entered into the model at Step 1, explaining 19% of the variance in parental sensitivity, $R^2 = .185$, $F(1,39) = 18.06$, $p < .01$. After entry of the parental attachment representations at Step 2 the total variance explained by the model as a whole increased to 25%, $R^2 = .251$, $F(2,38) = 12.23$, $p < .01$. At step 2, only PTSD symptoms were significant. After the addition of the interaction term at Step 3, the total variance explained by the model as a whole further increased to 38%, $R^2 = .384$, $F(3,37) = 12.47$, $p < .001$. The interaction term explained an additional 13% of the variance in sensitivity, R squared change = .133, F change (1, 37) = 7.97, $p < .01$. In the final model, PTSD symptoms, parental attachment representations and the interaction term were all significant. These findings, just like in the total sample, support hypothesis three. This means that mothers with more insecure attachment representations and more PTSD symptoms will be less sensitive than when they either have PTSD or an insecure attachment representation alone.

Table 3. *Unstandardized Regression Coefficients and Bootstrapped Standard Errors of Hierarchical Regression Analyses Used to Test the Moderation Model.*

			<i>B</i>	<i>SE B</i>	
Model 1. Total sample	Step 1	Constant	4.35	0.17	
		HTQ scores	-0.82	0.25**	
	Step 2	Constant	4.34	0.17	
		HTQ scores	-0.73	0.25**	
		SBS scores	0.44	0.21*	
	Step 3	Constant	4.41	0.16	
		HTQ scores	-0.62	0.25*	
		SBS scores	0.45	0.18*	
		HTQ scores x SBS scores (Interaction term)	0.71	0.31*	
	Model 2. Without couples	Step 1	Constant	4.19	0.19
			HTQ scores	-0.81	0.30*
		Step 2	Constant	4.19	0.19
HTQ scores			-0.74	0.30*	
SBS scores			0.33	0.30	
Step 3		Constant	4.29	0.18	
		HTQ scores	-0.62	0.30*	
		SBS scores	0.36	0.24	
		HTQ scores x SBS scores (Interaction term)	0.98	0.42**	
Model 3. Fathers		Step 1	Constant	4.57	0.24
			HTQ scores	-0.74	0.34*
		Step 2	Constant	4.60	0.23
	HTQ scores		-0.76	0.39*	
	SBS scores		0.86	0.47	
	Step 3	Constant	4.60	0.25	
		HTQ scores	-0.86	0.47	
		SBS scores	0.87	0.58	
		HTQ scores x SBS scores (Interaction term)	-0.36	0.86	
	Model 4. Mothers	Step 1	Constant	4.23	0.22

		HTQ scores	-0.96	0.34**
	Step 2	Constant	4.20	0.21
		HTQ scores	-0.83	0.35*
		SBS scores	0.40	0.23
	Step 3	Constant	4.35	0.20
		HTQ scores	-0.78	0.31*
		SBS scores	0.41	0.20*
		HTQ scores x SBS scores (Interaction term)	0.89	0.37**

Note: $R^2 = .15$ step 1, $\Delta R^2 = .07$ step 2 and $\Delta R^2 = .08$ step 3 ($p < .01$) for model 1, $R^2 = .16$ step 1, $\Delta R^2 = .04$ step 2 and $\Delta R^2 = .14$ step 3 ($p < .01$) for model 2, $R^2 = .16$ step 1 ($p = .055$), $\Delta R^2 = .12$ step 2 ($p = .035$), $\Delta R^2 = .02$ step 3 ($p = .073$) for model 3, and $R^2 = .19$ step 1, $\Delta R^2 = .07$ step 2 and $\Delta R^2 = .13$ step 3 ($p < .01$) for model 4.
* $p < .05$, ** $p < .01$

Note 2: Bootstrap results are based on 5000 bootstrap samples.

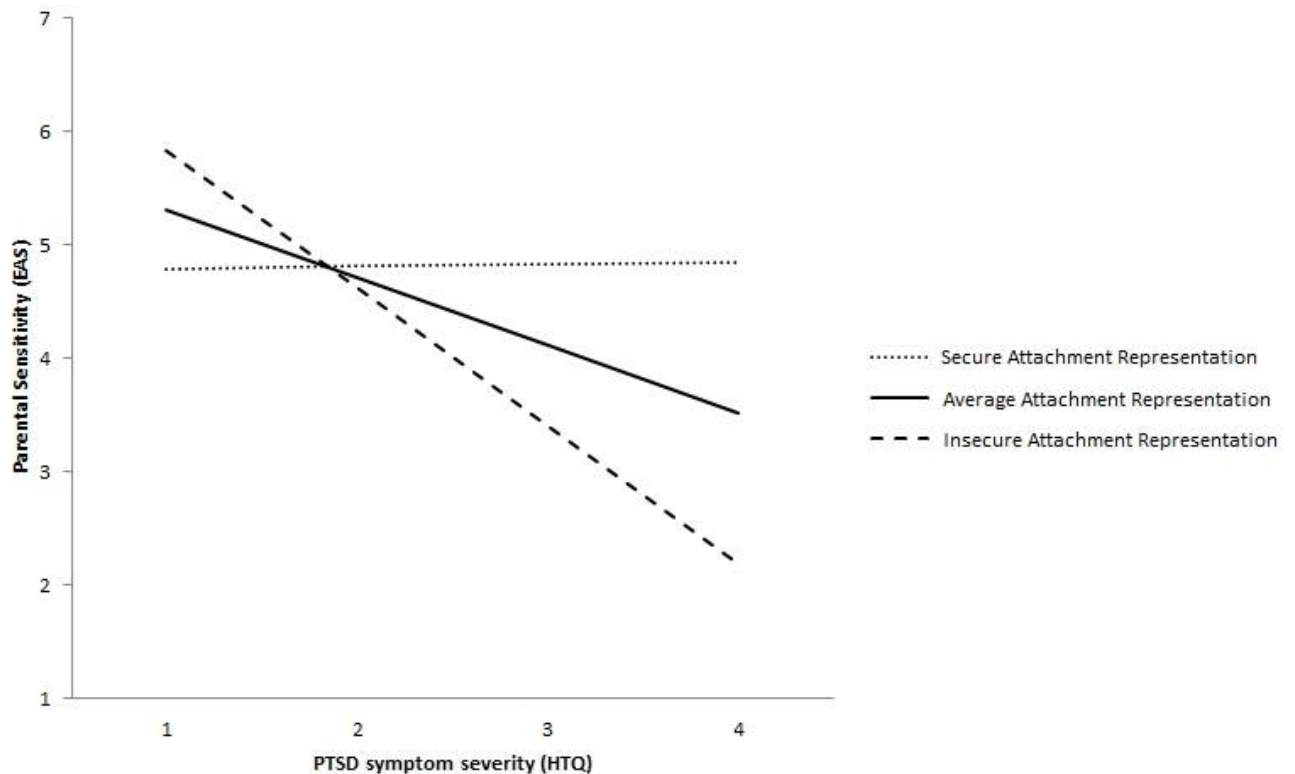


Figure 1. Interaction between PTSD Symptoms and Attachment Representation for the Total Sample.

Discussion

Adult attachment reflects the mental representation of past and present attachment experiences and has a very important function by providing a personal framework to regulate behavior and expectations both in present relationships and as new relationships are constructed (Coppola, Cassibba, & Costantini, 2007; Riem, Bakermans-Kranenburg, van IJzendoorn, Out, & Rombouts, 2012). These representations consist in part of working models of the world and of significant persons in it (Bowlby, 1973). Since traumatic events have the intrinsic property to shatter people's basic assumptions of self, others and the world (Janoff-Bulman, 1989), we hypothesized that the experience of traumatic events would change attachment representations in a more negative direction. Because a substantial subset of trauma victims develop symptoms of PTSD, which involves repeated reactivation of the trauma, (newly formed) negative models of self, others and the world may be amplified by their presence. Therefore, the second hypothesis of our study was that more PTSD symptoms would lead to a more insecure attachment representation. Furthermore, because attachment insecurities and PTSD of parents have proven to affect parent's caregiving behaviours, our third hypothesis was that insecure attachment representations would lead to an increased risk of insensitive parenting when a parent suffers from a lot of PTSD symptoms.

The influence of traumatic events on adult attachment representations

In contrast to our expectations, we failed to find a significant relation between the number of traumatic events experienced and the degree to which parent's attachment representations were secure. Therefore, we must conclude that our first hypothesis can not be confirmed. This finding is in contrast with numerous studies on the topic of change in attachment patterns in adulthood (e.g. Cozzarelli, Karafa, Collins, & Tagler, 2003; Davila & Cobb, 2003; Hamilton, 2000; Lewis et al., 2000; Mikulincer & Shaver, 2007; Sampson, 2006; Waters, Weinfield, & Hamilton, 2000), who showed that attachment patterns can change after the occurrence of disconfirming attachment relevant- or life events. Several factors may account for our finding.

First of all, the study results may have been influenced by the attachment distribution of our sample. With only four participants who had enough access to and awareness of a secure base script to score in the range of secure attachments, secure attachment representations were clearly underrepresented in this sample. As a consequence, we have compared people who are almost all in the spectrum of attachment insecurity, which made it difficult to detect differences between people with various degrees of attachment in the face of the number of traumatic events they experienced and to obtain significant correlations between secure base scriptedness and traumatic experiences. This is in line with previous findings that secure attachment representations are underrepresented in clinical

samples (Bakermans-Kranenburg & van IJzendoorn, 2009; van IJzendoorn & Bakermans-Kranenburg, 2008; Van IJzendoorn & Bakermans-Kranenburg, 1996). However, it remains unclear whether this over-representation of insecure attachments is due to the experience of traumatic events and/or PTSD symptoms or that they already had insecure attachment representations before.

This leads to a possible second explanation for our findings. When most of the individuals in our sample already lacked the possession of a secure base script before they start experiencing the specific war- and refugee related traumatic events, this could explain why traumatic experiences did not influence attachment security in this sample, because there was no attachment security to begin with. Maybe the experience of traumatic events goes beyond the specifically war-related events in adulthood, in that many of the individuals in this sample experienced childhood related traumatic- or negative events or negative caregiving experiences in infancy. As we have seen, when experienced during childhood, these factors are amongst others significant predictors of attachment insecurities later in life (Weinfield et al., 2000). It seems reasonable to expect that these individuals, who often grew up in developing countries with political unrest, protest movements or civil war, faced several difficulties from within and outside their family. In other research done on the topic of adult attachment in the face of refugee traumatization, there is indeed evidence that most of the refugee- and asylum seeker participants experienced multiple traumatic events during childhood, for example, loss of the primary caregiver in war context, physical abuse during childhood in context of war and domestic violence (De Haene et al., 2010). These experiences are likely to have had an influence on the building of attachment security and models of self, others and the world, and hence the knowledge of and access to a secure base script (Dykas et al., 2006). Furthermore, as attachment patterns will only change in the face of life events that disconfirm current attachment models (Davila & Cobb, 2004), it seems reasonable to expect that when most of our participants had insecure attachments in childhood, which were sustained by the ongoing process of traumatization experienced later in life, attachment representations did not change in face of the refugee experiences and war related traumatic events as measured in our study. When their models of self, others and the world were already negative, they may have remained the same. Further research on the topic of trauma and attachment should include measures that capture both present and past traumatic experiences and give information about the degree of attachment security in infancy, possibly by designing a specific longitudinal study. It also should include self-report measures of the degree various traumatic experiences impacted their life's and thoughts about self, others and the world.

A third explanation could be the complex character of refugee- and asylum seekers traumatization. In addition to the of experiencing of one or multiple traumatic events in their countries of origin, refugees and asylum seekers also have to deal with several exile-related stressors and other subjective experienced traumatic events, which can be as powerful as events prior to flight (Pernice & Brook and Gorst-Unsworth & Goldenberg cited in Tribe, 2002) . This complex cluster of pre-flight

and post-flight stressors of war, violent loss, persecution, ethnic conflict, family separation, cultural uprooting, acculturation stressors and legal insecurity forms a pervasive accumulation of life-threatening events and multiple losses (Lustig et al. as cited in De Haene, Grietens, & Verschueren, 2010). This makes the refugee experience a long and tough process of (sequential) traumatization, in which traumatic responses, prolonged grief, and chronic exile-related distress interfere with stabilization and recovery in the host society (Bala as cited in De Haene et al., 2010). Maybe, it is this process of sequential traumatization that impacts the attachment representations of refugee and asylum seeker-parents more than the traumatic experiences in the country of origin themselves. Especially because many refugees connect their psychological problems to the political and social aspects of their lives in the country of reception, rather than to the experiences in their country of origin (Boomstra & Kramer and Sveaass & Reichelt as cited in Bala, 2005). Because post-exile stressors and traumatic events were not included in this study, this could explain why we did not find an association between traumatic experiences and attachment representations. Therefore, in further research on this topic it would be recommended to include measures on other events that can be perceived as traumatic, such as exile-related- and post-flight stressors in the host country.

The influence of PTSD on adult attachment representations

As opposed to our expectations, more PTSD symptoms were not related to higher attachment insecurities in our study. Therefore, our second hypothesis could also not be supported. This finding was surprising given the fact that other studies that assessed the influence of PTSD and trauma on attachment have found that they were associated with higher attachment insecurities (Mikulincer et al., 2011; Solomon et al., 2008), and that trauma symptoms, such as that of PTSD, are related to certain types of attachment (Carlson and Pasquini, Liotti, Mazzotti, Fassone & Picardi cited in Earls, 2010).

As is incorporated in attachment theory, attachment patterns can change when attachment relevant life events occur (Lewis et al., 2000; Waters et al., 2000). As a consequence, a lot of previous research on trauma and attachment has focused on trauma inflicted by or related to attachment figures, such as childhood interpersonal abuse and neglect or loss of primary caregivers (e.g. Hamilton, 2000; Waters et al., 2000; Weinfield et al., 2000). Maybe the lack of influence from PTSD on attachment securities in this sample has to do with the type of trauma measured in this study. The PTSD symptoms are based upon the specifically war related traumatic events, and not on that of trauma inflicted by primary caregivers or attachment figures. As Kobak, Cassidy and Zir (2004) described, “attachment-related traumas” occur when “a frightening experience is accompanied by, or results from, the appraisal of loss, rejection, or abandonment by an attachment figure” (p. 391). These types of trauma’s often are not encompassed in the narrow diagnostic criteria of PTSD, but in more complex ones such as complex PTSD (CP)/ Disorders of Extreme Stress (DESNOS) (Herman, 1992a/1997).

Survivors of prolonged and repeated trauma who develop CP/DESNOS often behave in ways that are similar to behaviors of those diagnosed with personality disorders and develop symptoms such as alterations in systems of meaning, relations with others and self-perceptions (Earls, 2010). This would explain why there was no significant effect from PTSD on secure base scriptedness, because for secure base scriptedness to change the type of trauma should have been more attachment related and aspects of the complex PTSD diagnosis should have been included in our measurements. Further research could try to assess whether different forms of trauma (attachment related or non-attachment related) have a different impacts on attachment security and could take into account measures that assess symptoms of complex PTSD.

The moderating role of adult attachment representations on the effect of trauma on the parent-child interaction

An important finding of this study is that parent's attachment representations moderate the relationship between symptoms of PTSD and parental sensitivity. This implies that parents with more insecure attachment representations and more PTSD symptoms are more insensitive to their child's needs than when they either have PTSD or an insecure attachment representation alone. It also implies that when a parent reports low levels of PTSD symptoms, only a weak relation between awareness and access to secure base scripts and sensitivity in parenting exists. However, when a parent suffers from a lot of PTSD symptoms, an insecure attachment representation can increase the risk on insensitive parenting. Therefore, especially in the face of individuals who experienced trauma, attention must be paid to attachment representations of parents, since the parent-child relationship can be negatively influenced by a lack of a secure base and risk factors such as symptoms of PTSD. Considering that this study is one of the first to integrate research on attachment, trauma and parent-child relationships, it is important to replicate and possibly extend these findings with further research.

Strengths and limitations

This study is valuable in that it combines research on trauma and attachment and their effects on parenting. In most studies only one of these topics is addressed, and almost none of them incorporated measures on parent-child relationships. By integrating these different fields, we were able to provide a comprehensive picture of the interaction between trauma symptoms and attachment insecurities on insensitive caregiving patterns in a high-risk population of refugee- and asylum seeker parents.

This study was subjected to several limitations. The first concerns the cross-sectional nature of our study design. Although we wanted to test whether traumatic experiences and PTSD symptoms affected attachment security, because of our study design we only had the possibility to investigate the

degree to which PTSD symptoms and traumatic experiences predicted attachment security at one point in time. To test whether attachment representations changed over time as a consequence of the experience of traumatic events and the development of PTSD symptoms, we should have inserted different time points to measure our study variables. Because of the lengthy and complex character of such a design and the difficulty to reach this specific population, this was out of reach for the current study. In the future, the present study could be adapted to such a longitudinal design to gain more insight in the precise mechanisms that are involved in the change or stability of attachment representations in the face of trauma. Another advantages of such a longitudinal design would be that it makes it possible to draw conclusions about causality between study variables. For example, although we assumed that PTSD symptoms and trauma experiences would lead to change in attachment, supported by findings of studies in the same topic (Mikulincer et al., 2011; Solomon et al., 2008), other studies indicate the opposite: attachment security influences the presence and severity of symptoms of PTSD (Armour et al., 2011; Armour, Elklit, & Shevlin, 2011; Benoit, Bouthillier, Moss, Rousseau, & Brunet, 2010; Besser & Neria, 2012; O'Connor & Elklit, 2008; StovallMcClough & Cloitre, 2006). This shows that the link between trauma and attachment is not yet clear. With the design of our study, we were not able to clarify this link.

A second limitation of this study concerns the generalizability of our results. Because of the particular war- and migration specific experiences of this high-risk, clinical sample, generalization of the results to other clinical and non-clinical populations might be limited. Also, the high prevalence of insecure attachments in this study, which is found to be much lower in non-clinical samples, is not representative for parents who suffer from trauma but do not have a refugee- or asylum seeker status. To see if the finding that parent's attachment representations have a moderating role in the influence of PTSD on attachment securities does also apply to other populations than refugees and asylum seekers, further research with inclusion of more heterogeneous groups should be done.

A final limitation concerns the use of the Secure Base Script assessment. Although various studies have documented the reliability and validity of the attachment script representation task as a measure of adult attachment in various cultural settings (Bost et al., 2006; Vaughn et al., 2006; Verissimo & Salvaterra, 2006; Waters & Waters, 2006), there was a substantial subset of our sample (12.5%) that refused this assessment. This had a negative impact on the sample size in our study and limited the power of our results. Since participants that refused to do the SBS significantly completed lower educations than participants without missing scores, they might be turned off by the fact that this method involved reading words. Also, as demonstrated in studies on story telling tasks or tasks that involved the production of a narrative, factors as 'verbal creativity' and other factors are related to secure script narrative productivity, that is, the length and fluency of narrative (Albert & Kormos, 2004; Clucas & Psouni, 2011). Maybe it is this 'creative component' (after all parents were asked to produce a short story in front of the researcher and translator) that turned a lot of participants of,

because they were for example scared to fail or be judged by one of the attendees. For the future it might be useful to make changes to the representation of the test, especially in a culturally diverse samples, or use the SBS in combination with self-report measures of attachment, to prevent that participants have to be excluded from analyses owing to missing data on one measurement.

Conclusions and implications

This study revealed that trauma in the form of PTSD symptoms and insecure attachment representations of parents can cause a significant decrease in the ability to perceive and correctly interpret children's attachment signals, and to respond to those signals appropriately, promptly and effectively. It also revealed that this risk of insensitive parenting increases when a parent suffers from a lot of PTSD symptoms and does not have a secure attachment representation to rely on.

These findings are of clinical importance because of several reasons. First, they show that in the counseling of traumatized parents (even maybe parents with psychopathology in general), inquiry about parenthood and well-being of children should be the norm. Effort should be directed at re-establishing attunement between parent and child, for example in combined treatment (Ee et al., 2012).

Second, it stresses the importance of screening parents' attachment representations when they sign up for trauma related problems, or when treating refugees or asylum seekers in general. When insecure attachments are detected, parents can be supported in maintaining or developing an effective parenting style, so that insensitive caregiving patterns will not harm the child and the parent-child relationship. This is crucial for the development of a secure attachment of the child and for protecting the child against the effect of parental trauma, because research has shown that parent's post-traumatic stress symptoms have a negative influence on the psychosocial functioning of their infants (Al-Turkait & Ohaeri, 2008; Daud, Klinteberg, & Rydelius, 2008; Ee et al., 2012; Hoven et al., 2004; Hoven et al., 2005). So in addition to the treatment of PTSD symptoms, the changing of inner working models should be part of the treatment of traumatized individuals (Daniel, 2006; Pearlman & Courtois, 2005). By providing them with a secure base from which they can safely explore thoughts and feelings, the therapeutic alliance can serve as a basis to recover damaged views of self, others and the world. It is through this process they can develop a sense of attachment security, maintain or restore parental caregiving capacities throughout family life in exile and the potential risk of intergenerational transmission of trauma and attachment can be reduced.

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Appendix 1: Correlations between study variables and assessment of normality

To assess relations between the various study variables, Pearson product moment correlations were computed among parental experiences of traumatic events, parental post-traumatic stress symptoms, attachment representations in the form of their secure base scriptedness score and parental sensitivity. These correlations are presented in Table I.

As can be seen in the table, in the total population sample experienced traumatic events were significantly related with the total post-traumatic stress symptoms on the HTQ (HTQ symptoms), $r=.75, p < .001$, and post-traumatic stress disorder symptoms according to the DSM IV (PTSD *DSM-IV* symptoms), $r=.70, p < .001$. Traumatic experiences did not significantly correlated with sensitivity or secure base scriptedness. The HTQ symptoms were highly correlated with the PTSD *DSM-IV* symptoms, $r=.96, p < .001$ and with sensitivity, $r=.39, p < .01$, but not with secure base scriptedness. Furthermore, PTSD *DSM-IV* symptoms were significantly correlated with sensitivity, $r=-.37, p < .01$. There was no significant correlation between PTSD *DSM-IV* symptoms and secure base scriptedness. Sensitivity correlated significantly with secure base scriptedness, $r=.32, p < .01$.

In the group without couples, traumatic experiences were significantly correlated with HTQ symptoms, $r=.74, p < .001$, and PTSD *DSM-IV* symptoms, $r=.65, p < .001$. They did not correlate significantly with sensitivity or secure base scriptedness. HTQ scores correlated highly significant with PTSD *DSM-IV* symptoms, $r=.96, p < .001$, and sensitivity, $r=-.39, p < .01$, not with secure base scriptedness. PTSD *DSM-IV* symptoms were also significantly correlated with sensitivity, $r=-.40, p < .01$, not with secure base scriptedness. There was no significant correlation between sensitivity and secure base scriptedness.

In the group with only fathers traumatic experiences were significantly correlated with HTQ symptoms, $r=.69, p < .001$ and PTSD *DSM-IV* symptoms, $r=.60, p < .01$. They did not correlate significantly with secure base scriptedness or sensitivity. Furthermore, HTQ symptoms were correlated with PTSD *DSM-IV* symptoms, $r=.96, p < .001$. They did not correlate significantly with sensitivity or secure base scriptedness. PTSD *DSM-IV* symptoms were not significantly correlated with sensitivity and secure base scriptedness. Sensitivity and secure base scriptedness were also not significantly correlated with each other.

In the group with mothers traumatic experiences were, again, significantly correlated with HTQ symptoms, $r=.78, p < .001$, and PTSD *DSM-IV* symptoms, $r=.74, p < .01$, and not with sensitivity or secure base scriptedness. HTQ symptoms were significantly correlated with PTSD *DSM-IV* symptoms, $r=.95, p < .001$, and sensitivity, $r=-.43, p < .01$, while PTSD *DSM-IV* symptoms were also correlated with sensitivity, $r=-.40, p < .01$. Sensitivity was also significantly correlated with secure base scriptedness, $r=.34, p < .05$. Neither HTQ symptoms nor PTSD *DSM-IV* symptoms did correlate significantly with secure base scriptedness.

Table 1. Pearson Correlations Between Study Variables For the Different Groups of Analysis.

	1.	2.	3.	4.	5.
Model 1. Parents with couples (both fathers and mothers and couples)					
1. Traumatic Experiences	-	.75***	.70***	-.20	-.21
2. Total Post Traumatic Symptoms (HTQ)		-	.96***	-.39**	-.17
3. PTSD <i>DSM-IV</i> Symptoms			-	-.37**	-.17
4. EAS scale Sensitivity				-	.32**
5. Secure Base Script Total					-
Model 2. Parents without couples (both fathers and mothers)					
1. Traumatic Experiences	-	.74***	.65***	-.21	.11
2. Total Post Traumatic Symptoms (HTQ)		-	.96***	-.39**	-.18
3. PTSD <i>DSM-IV</i> Symptoms			-	-.40**	-.22
4. EAS scale Sensitivity				-	.26
5. Secure Base Scriptedness Total					-
Model 3. Fathers					
1. Traumatic Experiences	-	.69***	.60**	-.14	.19
2. Total Post Traumatic Symptoms (HTQ)		-	.96***	-.40	.02
3. PTSD <i>DSM-IV</i> Symptoms			-	-.40	.01
4. EAS scale Sensitivity				-	.33
5. Secure Base Scriptedness Total					-
Model 4. Mothers					
1. Traumatic Experiences	-	.78***	.74***	-.24	-.27
2. Total Post Traumatic Symptoms (HTQ)		-	.95***	-.43**	-.22
3. PTSD <i>DSM-IV</i> Symptoms				-.40**	-.22
4. EAS scale Sensitivity				-	.34*
5. Secure Base Scriptedness Total					-

*Correlation is significant at the .05 level (two-tailed).

** Correlation is significant at the .01 level (two tailed)

*** Correlation is significant at the .001 level (two-tailed)

Overall, the scores on the variables in most groups graphically did look quite normally distributed. However, tests of normality indicated that HTQ scores (the total scores on the HTQ measure which represent PTSD symptoms), secure base scriptedness scores and sensitivity scores were not normally distributed in most groups (not all variables were tested for normality because we will not use them as independent variables in further analyses). In the total group, HTQ symptoms, $D(65) = 0.121$, $p < .05$, secure base scriptedness, $D(65) = 0.131$, $p < .01$, and sensitivity, $D(65) = 0.159$, $p < .001$, were significantly not normal. In the paternal group, HTQ symptoms, $D(24) = 0.180$, $p < .05$, secure base scriptedness, $D(24) = 0.192$, $p < .05$, and sensitivity, $D(24) = 0.211$, $p < .01$, were significantly not normal. In the group without couples, sensitivity, $D(48) = 0.142$, $p < .05$, and secure

base scriptedness, $D(48) = 0.144$, $p < .05$, were significantly not normal. In the maternal group sensitivity, HTQ symptoms and SBS scores were normally distributed. Because not all variables were normally distributed in each group, we decided to perform also Kendall's tau analysis on our data (see Table 2). Kendall's tau, τ , is a non-parametric statistic and can be used when the data have violated parametric assumptions such as normally distributed data.

When computing correlations with Kendall's tau, in the complete population sample traumatic experiences correlated significantly with HTQ symptoms, $\tau = .49$, $p < .001$, and PTSD *DSM-IV* symptoms, $\tau = .44$, $p < .001$. They did not show any significant relationships with sensitivity or secure base scriptedness. HTQ symptoms were highly correlated with PTSD *DSM-IV* symptoms, $\tau = .80$, $p < .001$, and with sensitivity, $\tau = -.23$, $p < .05$. They did not significantly correlate with secure base scriptedness. PTSD *DSM-IV* symptoms did also significantly correlate with sensitivity, $\tau = -.19$, $p < .05$ but not with secure base scriptedness. Sensitivity was the only variable that did significantly correlate with secure base scriptedness in the total sample, $\tau = .24$, $p < .01$.

In the parents without couples group, traumatic experiences were again significantly correlated with HTQ symptoms, $\tau = .50$, $p < .001$, and PTSD *DSM-IV* symptoms, $\tau = .38$, $p < .001$, and not with sensitivity or secure base scriptedness. This time, HTQ symptoms showed significant correlations with PTSD *DSM-IV* symptoms, $\tau = .79$, $p < .001$, but not with sensitivity and secure base scriptedness. PTSD *DSM-IV* symptoms did also not correlate significantly with sensitivity and secure base scriptedness. Sensitivity was again the only variable that had a significant correlation with secure base scriptedness, $\tau = .25$, $p < .05$.

For the paternal group significant correlations were found between traumatic experiences and HTQ symptoms, $\tau = .48$, $p < .01$, or PTSD *DSM-IV* symptoms, $\tau = .38$, $p < .01$, while not with sensitivity and secure base scriptedness. HTQ symptoms and PTSD *DSM-IV* symptoms also correlated significantly, $\tau = .76$, $p < .001$. They had no significant relation with sensitivity or secure base scriptedness. Neither did PTSD *DSM-IV* symptoms or sensitivity with secure base scriptedness.

The maternal group showed significant correlations between traumatic experiences, HTQ symptoms $\tau = .54$, $p < .001$, and PTSD *DSM-IV* symptoms, $\tau = .49$, $p < .001$, not between traumatic experiences, sensitivity, and secure base scriptedness. HTQ symptoms were significantly correlated with PTSD *DSM-IV* symptoms, $\tau = .83$, $p < .001$, and sensitivity, $\tau = -.27$, $p < .05$. PTSD *DSM-IV* symptoms were not significantly correlated with sensitivity or secure base scriptedness. Sensitivity was significantly correlated with secure base scriptedness, $\tau = -.23$, $p < .05$.

Table 2. Kendall's Tau Correlations Between Study Variables for the Different Groups of Analysis.

	1.	2.	3.	4.	5.
Model 1. Parents with couples (both fathers and mothers and couples)					
1. Traumatic Experiences	-	.49***	.44***	-.11	-.15
2. Total Post Traumatic Symptoms (HTQ)		-	.80***	-.23*	-.09
3. PTSD <i>DSM-IV</i> Symptoms			-	-.19*	-.09
4. EAS scale Sensitivity				-	.24**
5. Secure Base Script Total					-
Model 2. Parents without couples (both fathers and mothers)					
1. Traumatic Experiences	-	.50***	.38***	-.10	-.07
2. Total Post Traumatic Symptoms (HTQ)		-	.79***	-.21	-.08
3. PTSD <i>DSM-IV</i> Symptoms			-	-.20	-.10
4. EAS scale Sensitivity				-	.25*
5. Secure Base Scriptedness Total					-
Model 3. Fathers					
1. Traumatic Experiences	-	.48**	.38**	-.05	.14
2. Total Post Traumatic Symptoms (HTQ)		-	.76***	-.22	-.02
3. PTSD <i>DSM-IV</i> Symptoms			-	-.26	-.03
4. EAS scale Sensitivity				-	.05
5. Secure Base Scriptedness Total					-
Model 4. Mothers					
1. Traumatic Experiences	-	.54***	.49***	-.15	-.20
2. Total Post Traumatic Symptoms (HTQ)		-	.83***	-.27*	-.16
3. PTSD <i>DSM-IV</i> Symptoms				-.21	-.14
4. EAS scale Sensitivity				-	.23*
5. Secure Base Scriptedness Total					-

*Correlation is significant at the .05 level (two-tailed).

** Correlation is significant at the .01 level (two tailed)

*** Correlation is significant at the .001 level (two-tailed)